

NEW SPECIES AND NEW COLLECTION RECORDS OF CERATOPOGONIDAE (DIPTERA) FROM SRI LANKA

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Abstract.—Two new species of Ceratopogonidae from Sri Lanka are described and illustrated: *Parabezzia orientalis*, the first of the genus to be found in the Orient, and *Atrichopogon schizonyx*. New collection records from Sri Lanka are presented for seven species of *Alluaudomyia*.

This paper is one in a series reporting on the biting midges of the family Ceratopogonidae collected by members of the Smithsonian Ceylonese Insect Project. We thank Karl V. Krombein, director of the project, for the opportunity to study this material. We are grateful to Molly K. Ryan for making the illustrations.

For explanation of methods of measurement and of ratios see Giles et al. (1981). The first values presented are those of the holotype followed by the range of variation of the paratypes in parentheses.

Genus *Alluaudomyia* Kieffer

The genus *Alluaudomyia* is a cosmopolitan group of approximately 114 species. A revision of the Oriental species with a key was published by Wirth and Delfinado (1964). Delfinado and Hardy (1973) listed three species from the island, *marginalis* Wirth and Delfinado, *spinosipes* Tokunaga, and *xanthocoma* (Kieffer). Four additional species are represented in the Ceylonese Project collections.

Alluaudomyia bifurcata Wirth and Delfinado

New Record.—SRI LANKA: Col. Dist., Beyagama, sea level, 20-21.viii.1973, G. Ekis, 1 ♀.

Alluaudomyia formosana Okada

New Records.—SRI LANKA: Keg. Dist., Kitulgala Resthouse, 3-5.ii.1979, UVL trap, K.V. Krombein, P.B. Karunaratne, T. Wijesinhe, S.

Siriwardane, and T. Gunawardane, 10 ♀; Rat. Dist., Ratnapura, 1-3.ii.1979, UVL trap, K.V. Krombein, P.B. Karunaratne, T. Wijesinhe, S. Siriwardane, and T. Gunawardane, 2 ♀.

Alluaudomyia fuscipes Wirth and Delfinado

New Record.—SRI LANKA: Uggalkaltota, 5.ii.1970, D. Davis and W. Rowe, light trap, 1 ♀.

Alluaudomyia maculosipennis Tokunaga

New Record.—SRI LANKA: Matale Dist., Bandarapola, 12.v.1974, UVL trap, Gans and Prasanna, 1 ♀.

Alluaudomyia marginalis Wirth and Delfinado

New Record.—SRI LANKA: Uggalkaltota, 5.ii.1970, D. Davis and W. Rowe, light trap, 1 ♀.

Alluaudomyia spinosipes Tokunaga

New Record.—SRI LANKA: Uggalkaltota, 5.ii.1970, D. Davis and W. Rowe, light trap, 2 ♀.

Alluaudomyia xanthocoma (Kieffer)

New Record.—SRI LANKA: Keg. Dist., Kitulgala Resthouse, 3-5.ii.1979, UVL trap, K. V. Krombein, P.B. Karunaratne, T. Wijesinhe, S. Siriwardane, and T. Gunawardane, 1 ♂.

Genus *Parabezzia* Malloch

The genus *Parabezzia* has been considered as mainly a New World genus with 18 known species from the Americas. There are four known Afrotropical species, *falcipennis* Clastrier (1960) from Zaire, *insolita* Vattier and Adam (1966) from the Congo Republic, and *obscura* de Meillon and Wirth (1981b) and *stagni* de Meillon and Wirth (1981a) from South Africa. The discovery of a new species from Sri Lanka in the Oriental Region indicates that the genus is still more widespread than formerly suspected.

Parabezzia orientalis Giles and Wirth, NEW SPECIES

Fig. 1

Female holotype.—Wing length 0.90 (0.89-1.12, $n = 5$) mm; breadth 0.40 (0.39-0.48, $n = 5$) mm.

Head: Brown. Eyes well separated. Antennal pedicel light brown, flagellum darker; verticils well developed on all segments; length of flagellar segments (Fig. 1a) in proportion of 42-36-30-31-32-31-32-30-38-43-44-44-61, antennal ratio 0.87. Palpus (Fig. 1b) light brown, 4-segmented; lengths of segments in proportion of 10-20-34-21; 3rd segment with 2 (1-2, $n = 5$) cap-

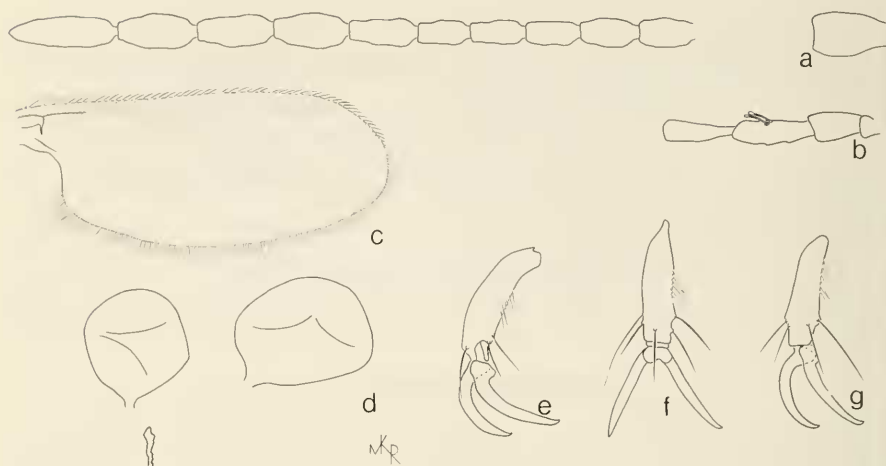


Fig. 1. *Parabezzia orientalis*, female. a, Antenna. b, Palpus. c, Wing. d, Spermathecae. e, Fifth tarsomere and claws of foreleg. f, Same of midleg. g, Same of hindleg.

itate sensilla; palpal ratio 3.29 (3.14–3.86, $n = 5$). Proboscis dark brown, short, P/H ratio 0.43 (0.43–0.53, $n = 3$); mandible with 12 (10–12, $n = 5$) large teeth, the distal ones slightly longer.

Thorax: Dark brown, prescutellar median area and large humeral areas paler brown. Legs dark brown from coxae to tibiae; hindtibial comb with 7 (7–8, $n = 4$) spines, the 3rd from the spur longest. Tarsi pale, hindbasitarsus and 5th tarsomeres light brown; claws (Fig. 1e–g) slightly unequal, long and slender, the longer claw on each leg with proportional lengths of 29, 29, 28.

Wing (Fig. 1c): Hyaline; costa, base of subcosta, radial veins, medial stem, basal arculus, and base of 1st A slightly infuscated, all other veins faint; costal sections I–II–III with lengths in proportion of 96–75–18, Rs 52. Rs extending 0.95 (0.89–0.97, $n = 5$) of wing length; costa with slight pale basal swelling covered with fine microtrichia, also bearing 2 (2–4, $n = 5$) large setae; fringe of costal setae longer than the width of costa, extending to the wing tip, the fringe consisting of a series arising from the anterior edge of the costa. Halter pale.

Abdomen: Brown with segments 8, 9, and cerci darker. Spermathecae (Fig. 1d) 2, ovoid with short necks; unequal, measuring 0.071 by 0.054 mm and 0.061 by 0.053 mm; a tubelike rudimentary spermatheca present.

Male.—Unknown.

Distribution.—Sri Lanka.

Types.—All on slides in phenol balsam. Holotype ♀, Sri Lanka, Monaragala District, Mau Ara, 10 mi. E Edawalawa, 100 m, UV light, 24–26 Sept. 1977, coll. K.V. Krombein, P.B. Karunaratne, T. Wijesinhe, and M.

Jayawiera (Type no. 76119, USNM). Paratypes, 4 ♀, same data as holotype. Holotype and 2 paratypes deposited in the National Museum of Natural History, Washington, D.C. (USNM); 1 paratype will be deposited in the Colombo National Museum, Colombo, Sri Lanka, and another in the National Museum at the University of Sri Lanka at Peradeniya.

Discussion.—*Parabezzia orientalis* is the first species of *Parabezzia* to be recorded from the Oriental Region.

Parabezzia falcipennis (male) and *insolita* (female) differ from *orientalis* by the possession of a conspicuous beadlike swelling at the base of the costa. In *P. stagni* the costa extends markedly past the end of vein R4 + 5, nearly attaining vein M1 and the wing tip, the antennal ratio is 1.0, and the spermathecae lack sclerotized necks. *Parabezzia obscura* is known only from the male; it is marked very similar to *P. stagni*, but has a 3-segmented palpus.

Genus *Atrichopogon* Kieffer

The genus *Atrichopogon* is difficult taxonomically and the Oriental species are poorly known, although they are abundantly represented in nearly all ceratopogonid collections. We have been unable to make specific determinations of the Smithsonian Sri Lanka material except for the following species which possesses remarkable tarsal claws.

Atrichopogon schizonyx Giles and Wirth, NEW SPECIES

Fig. 2

Female Holotype.—Wing Length 0.87 mm; breadth 0.43 mm.

Head: Brown. Eyes finely pubescent above, bare below; contiguous for a distance equal to 3 facets. Antenna (Fig. 2a) light brown with well-developed verticils on all segments; segment 15 with terminal papilla; flagellar segments with lengths in proportion of 26-14-17-20-20-20-20-22-74-72-76-74-100, antennal ratio 2.49; segments 3-5 disciform and closely appressed. Palpus (Fig. 2c) light brown; segments in proportion of 21-25-38-26-22; 3rd segment swollen, spindle-shaped, with sensory pit moderately large and shallow; palpal ratio 2.1. Proboscis brown, moderately long, sections A-B-C (see Wirth, 1980) with lengths as 50-24-26; mandible (Fig. 2f) with 17 large teeth becoming smaller proximad.

Thorax: Brown, pleural regions lighter. Legs with coxae brown, trochanters light brown; femora and tibiae light brown with faint basal and apical light bands; hindtibial comb with 8 spines; tarsi light brown, hindtarsal ratio 3.15; paired claws (Fig. 2g-i) of each leg with lateral claw bifid with small tooth, mesal claw trifid, the middle tooth longest.

Wing (Fig. 2e): Light brown becoming paler caudad, veins darker. Macrotrichia few on anterior veins. Costal ratio 0.73; 2nd radial cell 4× length of 1st. Halter slightly infuscated.

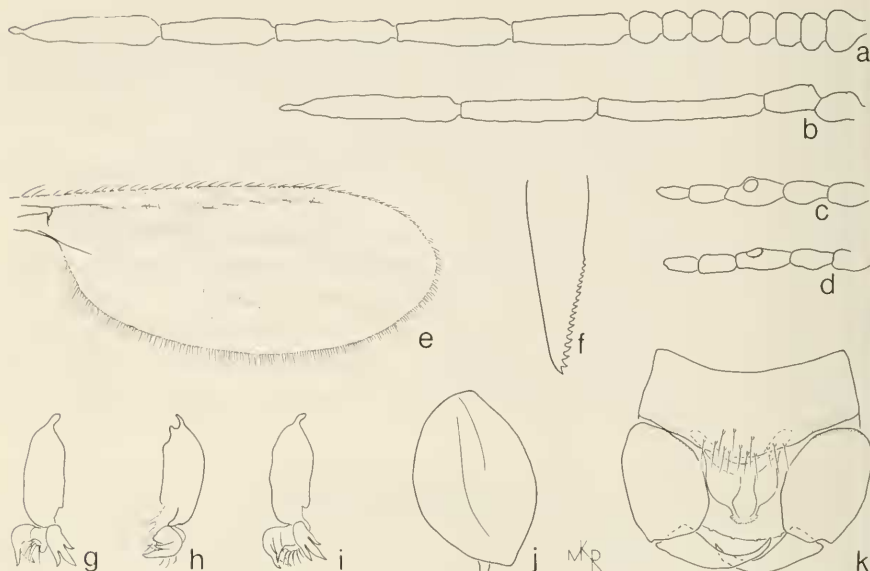


Fig. 2. *Atrichopogon schizonyx*. a, c, e-j. Female. b, d, k. Male. a, b, Antennae. c, d, Palpi. e, Wing. f, Mandible. g, Fifth tarsomere and claws of foreleg. h, Same of midleg. i, Same of hindleg. j, Spermatheca. k, Male genitalia.

Abdomen: Light brown darkening toward tip. Spermatheca (Fig. 2j) 1, partially collapsed, measuring 0.106 by 0.074 mm, ovoid with short slender neck.

Male Allotype.—Similar to female except for usual sexual differences. Genitalia (Fig. 2k) with 9th sternum short, caudal margin convex with approximately 17 setae; 9th tergum about $2\times$ length of 9th sternum. Basistyle stout, about as wide as long, extending slightly past tip of 9th tergum; basal apodeme with slender base, swelling at midportion, then extending cephalad and tapering to a long point; dististyle stout basally, tapering quickly and smoothly from base in a moderate curve and ending in a sharp point. Aedeagus with basal arms stout, arch about $2\times$ as broad as long; main body with rounded shoulders, slightly broader than long, with a short caudal process terminating in a cap.

Distribution.—Sri Lanka.

Types.—On slides in phenol balsam. Holotype ♀, Sri Lanka, Ratnapura District, Ratnapura, 1–3 Feb. 1979, UVL trap, coll. K. V. Krombein, P. B. Karunaratne, T. Wijesinha, S. Siriwardane, and T. Gunarwardane. Allotype ♂, Sri Lanka, Uggalkaltota, 5 Feb. 1970, coll. D. Davis and W. Rowe, light trap. Both deposited in USNM (Type no. 76120).

Discussion.—The name *A. schizonyx* refers to the unusually cleft claws,

by which it can readily be distinguished from related species. Although nothing is known of the life history of this species, the large mandibular teeth and cleft claws suggest that it is an insect parasite.

Atrichopogon schizonyx appears to be an ordinary member of the genus without any noteworthy features except for the unusual condition of the tarsal claws. The usual condition for the tarsal claws in *Atrichopogon* is for the female claw to be simple on the end, but a considerable number of species have the claws slightly bifid at the very tip or each bearing a slender spur partway down on the side. The male claws are usually both slightly cleft at the tip. Tokunaga, however, has described three *Atrichopogon* species departing from this pattern. In *A. gressitti* Tokunaga, (in Tokunaga and Murachi, 1959), known only from the male from the Caroline Islands, the claws are "stout, with tips bifid and each with a stout median tooth on the lateral side." In *A. unguis* Tokunaga (1962) from the Yaeyama Islands, the female claws are "cleft into 3 parts, lateral 1 small, other 2 equal," and male "claws bifid at ends." In *A. xanthopygus* Tokunaga (1962) from the Yaeyama Islands, the male claws are all "equally bifid and each with a small tooth on lateral side."

LITERATURE CITED

- Clastrier, J. 1960. Notes sur les Cératopogonidés. X. Cératopogonidés de la République du Congo (2). Arch. Inst. Pasteur Alger. 38: 258-298.
- Delfinado, M. D. and D. E. Hardy. 1973. A catalog of the Diptera of the Oriental Region. Vol. 1 Suborder Nematocera. The University Press of Hawaii, Honolulu. 618 pp.
- Giles, F. E., W. W. Wirth, and D. H. Messersmith. 1981. Two new species of biting midges and a check list of the genus *Culicoides* (Diptera: Ceratopogonidae) from Sri Lanka. Proc. Entomol. Soc. Wash. 83: 537-543.
- Meillon, B. de and W. W. Wirth. 1981a. Subsaharan Ceratopogonidae (Diptera) VI. New species and records of South African biting midges collected by A. L. Dyce. Ann. Natal Mus. 24: 525-561.
- . 1981b. Subsaharan Ceratopogonidae (Diptera). VII. The biting midges of the Kruger National Park, South Africa, exclusive of the genus *Culicoides*. Ann. Natal Mus. 24: 563-601.
- Tokunaga, M. 1962. Biting midges of the Ryukyu Islands (Diptera: Ceratopogonidae). Pac. Insects 4: 153-217.
- Tokunaga, M. and E. K. Murachi. 1959. Insects of Micronesia Diptera: Ceratopogonidae. Insects Micronesia 12(3): 100-434.
- Vattier, G. and J. P. Adam. 1966. Les Ceratopogonidae (Diptera) des Grottes de la République du Congo (Brazzaville). Ann. Speleol. 21: 711-773.
- Wirth, W. W. 1980. A new species and corrections in the *Atrichopogon* midges of the subgenus *Melochelea* attacking blister beetles (Diptera: Ceratopogonidae). Proc. Entomol. Soc. Wash. 82: 124-139.
- Wirth, W. W. and M. D. Delfinado. 1964. Revision of the Oriental species of *Alluaudomyia* Kieffer (Diptera, Ceratopogonidae). Pac. Insects 6: 599-648.